

## Notes on *Loasa* (Loasaceae) I–III

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### Abstract:

WEIGEND, M.: Notes on *Loasa* (Loasaceae) I–III. – I. *Loasa triphylla* Juss. and allies in the series *Saccatae* Urb. & Gilg. – II. “*Cajophora*” *venezuelensis* Steyerm. and its allies. – III. Proper use of the name *Loasa grandiflora* Desr. and a new species from Colombia. – *Sendtnera* 3: 219–253. 1996. –ISSN 0944–0178.

URBAN and GILG (1900) adopted six out of twelve names available for members of the *L. triphylla* Juss.-group and reduced them to mere varietal rank. Based on field studies and a revision of both the types and other herbarium collections elevation of three of these varieties to subspecific and of two others to specific rank (*Loasa roseoalba* Weigend, *Loasa aequatoriana* (Urb. & Gilg) Weigend spp. nov.) is proposed. Two additional species, *Loasa bicornuta* Weigend and *Loasa ramirezii* Weigend spp. nov. are described from Peru and southern Colombia respectively. This group of closely related taxa has its next relatives in *Loasa humboldtiana* Urb. & Gilg and *Loasa dyeri* Urb. & Gilg from Ecuador.

Based on field studies and a comparison with other *Loasas* from Colombia/Venezuela *Cajophora venezuelensis* Steyerm. und *C. larensis* Steyerm. are reevaluated. *C. venezuelensis* is recombined to *Loasa venezuelensis* (Steyerm.) Weigend while *C. larensis* is reduced to synonymy under the latter name. Two new taxa related to *L. venezuelensis* are described from the Sierra Nevada de Santa Marta and the Serranía de Perijá respectively: *Loasa santa-martae* and *Loasa perijensis*. They are characterized by falcate floral scales resp. divided stipules, characters new for the family. These three taxa here presented are closely related to each other and should be considered as a third taxonomical group closely related to the series *Loasa* ser. *Alatae* Urb. & Gilg and *Loasa* ser. *Saccatae* Urb. & Gilg.

The name *Loasa grandiflora* Desr. has been misused for a Peruvian taxon at least since URBAN & GILG's monography (1900). The type specimen, collected by Joseph De Jussieu (P-JUSS), comes from Ecuador, probably from Pichincha/Prov. Pichincha and corresponds to the more recent taxa *Loasa acuminata* Wedd. and *Loasa aurantiaca* Urb. & Gilg. These are therefore reduced to synonymy and *L. grandiflora* is established as valid name of the taxon. The species mistakenly called *L. grandiflora* therefore has to take the name *Loasa cymbopetala* Urb. & Gilg. *Loasa* ser. *Grandiflorae* Urb. & Gilg is circumscribed more precisely as a group of basally woody shrubs with fruits opening by a longitudinal slit, fleshy petals and staminodia with basal appendages. One new species of this group, *Loasa peltiphylla* Weigend sp. nov. from Pasto/ Nariño/ southern Colombia, is

described: It is easily distinguished from all known Loasas by its peltate leaves and black lenticels on the stem.

### Resumen:

URBAN y GILG (1900) adoptaron seis de los doce nombres disponibles para miembros del grupo de *Loasa triphylla* Juss. y las redujeron a nivel de meras variedades. Sobre la base de estudios de campo y la revisión de las colecciones nuevas en los herbarios y todos los tipos, se propone el nivel subespecífico para tres de estas formas y se eleva a nivel específico las dos más distintas (*Loasa roseoalba* Weigend, *Loasa aequatoriana* (Urb. & Gilg) Weigend spp. nov.). Se describen dos nuevas especies, *Loasa bicornuta* Weigend, *L. ramirezii* Weigend, spp. nov., de Perú y del Sur de Colombia respectivamente. Este grupo coherente de especies y subespecies está estrechamente relacionada con *Loasa humboldtiana* Urb. & Gilg y *Loasa dyeri* Urb. & Gilg del Ecuador.

Sobre la base de estudios de campo y la revisión de material de otras Loasas del área, se redefinen las especies *Cajophora venezuelensis* Steyererm. y *C. larensis* Steyererm. *C. venezuelensis* está recombinada como *Loasa venezuelensis* (Steyererm.) Weigend y *C. larensis* se reduce a la sinonimia bajo este nombre. Se describen dos especies nuevas muy características de la Sierra Nevada de Santa Marta y de la Serranía de Perijá: *Loasa santa-martae* y *Loasa perijensis*. Se distinguen por poseer escamas nectaríferas falcadas y estípulas divididas respectivamente, caracteres nuevos para la subfamilia. Estas tres especies están estrechamente relacionadas entre sí y representan un tercer grupo independiente cerca de las series *Alatae* y *Saccatae*.

El uso establecido del nombre *Loasa grandiflora* Desr. para una especie peruana es ilegítimo. El tipo colectado por Joseph de Jussieu proviene del Ecuador, probablemente del volcán Pichincha/Prov. Pichincha. Es idéntico con las especies más recientemente descritas *Loasa acuminata* Wedd. y *Loasa aurantiaca* Urb. & Gilg. Estos se reducen a sinonimia y se establece *Loasa grandiflora* como nombre legítimo del taxón. La especie mal interpretada del Perú recibe el nombre *Loasa cymbopetala* Urb. & Gilg. La serie *Grandiflorae* Urb. & Gilg está redefinida como un grupo de Loasas caracterizadas por un hábito arbustivo con tallos leñosos, pétalos carnosos y estaminodios con un apéndice basal. Se describe otra especie de este grupo, *Loasa peltiphylla* Weigend sp. nov. de Pasto/Nariño/Sur de Colombia, la cual se caracteriza por sus hojas peltadas y lenticelas negras en el tallo.

## I. *Loasa triphylla* Juss. and allies in the series *Saccatae* Urb. & Gilg

### Introduction

The genus *Loasa* is widespread in South and Central America and *L. triphylla* Juss. sensu URBAN & GILG (1900) of the series *Saccatae* Urb. & Gilg is by far the widest ranging taxon in the genus. Its distribution stretches from southern Mexico through Central America, Venezuela, Columbia and Ecuador right down to northern Peru. Nomenclature and valid subdivision of this species complex, however, remain highly problematic. By 1900, when URBAN and GILG revised the group in their study on Loasaceae, a total of some 12 names were available, some based on wild collections and some on cultivated material, some validly published and others only used in manuscript. URBAN & GILG reduced these species to 6 infraspecific entities, giving them mere varietal status while all to happily creating new species in other

groups of *Loasa* and *Cajophora*. In naming these varieties a number of older names were reduced to synonymy, others illegitimately transferred to new taxa and new ones were created. The relation between these varieties and to neighbouring species remained unclear and some highly dubious herbarium specimens were included in the study, obscuring the extent of geographical separation and mistakenly reporting the presence of *L. triphylla* right down to southeastern Brazil and Chile.

Based on field work in Colombia and a revision of herbarium material from most major herbaria, including all the extant potential type material, a new subdivision of the group is here proposed and the relations to neighbouring species are discussed.

## Discussion

*L. triphylla* was originally described by A.L. De Jussieu from a drawing by Morainville, an artist who accompanied Joseph de Jussieu on the Condamine voyage, and the plants brought back by Humboldt and Bonpland (JUSSIEU 1804: 27). All this material is preserved at P-JUSS and bears labels reading "Perou". Indeed all the Jussieu collections from South America bear that label though most of his *Loasas* undoubtedly were collected in central Ecuador. There is good reason to believe that the drawing of *L. triphylla* was made from plants collected near Quito (where J. De Jussieu spent a lot of time, DIELS 1937: 48), as it shows a large-flowered form, coinciding with what later came to be described as *L. vulcanica* Andr. The Humboldt & Bonpland collections were collected "in Loxam Peruvianorum", i.e. Loja, the present day province of southern Ecuador, but in those days considered as part of Peru. These collections represent a type very closely corresponding to the drawing mentioned above, but bearing considerably smaller flowers.

So the typical form of *L. triphylla* is the morph encountered between the provinces of Pichincha and Loja in southern and central Ecuador. The northern representatives of this morph ("*L. vulcanica*") closely resemble *L. triphylla* var. *aequatoriana* Urb. & Gilg (see below) in floral features. The large and small flowered forms of what is here considered as the type subspecies *L. triphylla* subsp. *triphylla* were separated into different varieties by Urban & Gilg who invalidly called the one (based on the Humboldt & Bonpland material) "*var. genuina*" and the other (based on *L. vulcanica* André) "*var. vulcanica*". As the protologue is accompanied by an illustration clearly based on the drawing by Morainville (i.e. corresponding to *L. vulcanica*), the latter would really have to be considered the type variety if any such division was made.

## The varieties by Urban & Gilg

There is a number of other forms in the *L. triphylla* complex, also considered as varieties by Urban & Gilg, which are, however, well differentiated on the basis of capsule position (erect to pendent) and outline (cylindrical to shortly conical), leaf structure (trifoliolate to bipinnate), flower size and shape of the floral scales. The latter, though extremely useful in determining the delimitation of series and species groups in *Loasa*, is of limited use in closely related species. The scales of *L. triphylla* generally have two horn-like projections on their back which are either always present and very conspicuous (*L. bicornuta*) or rather small (*L. aequatoriana*) or extremely variable (*L. triphylla* subsp. *papaverifolia*). In *L. triphylla* subsp. *papaverifolia* they are either very well developed and nearly equalling the scale or completely absent, i.e. the scale has a smooth, rounded back. *L. triphylla* subsp. *rudis*, the

widest ranging subspecies (Panama to Mexico) never has horns on the back of its scales.

The other characters named above depend on the growing conditions of the plant: Well nourished plants growing in shady positions tend to have larger, more strongly dissected leaves and larger flowers than sun-burnt, starved individuals. Poorly developed individuals of morphs with normally bipinnate to pinnate leaves can have trifoliolate laminas.

The interpretation of capsule outline and position is also problematical as all capsules are initially pendent and conical. Differences are only seen in fully mature capsules which are often absent from herbarium material. Well developed specimens from different geographical regions are, however, very clearly distinct and readily told apart. Yet these differences are small in comparison to those between other species of *Loasa*, especially in the ser. *Saccatae* Urb. & Gilg itself, but also in neighbouring groups (ser. *Grandiflorae* Urb. & Gilg and ser. *Alatae* Urb. & Gilg). Subspecific rank is therefore proposed for three of the morphs encountered in the *L. triphylla* complex while specific rank is attributed to the three most distinctive ones.

According to this concept there is a sequence of three subspecies:

– The typical subspecies, is restricted to the area between Loja and Pichincha in Ecuador. It is a erect herb 50–80 cm high and characterized by mostly trifoliolate leaves and strictly erect, cylindrical capsules.

– *L. triphylla* subsp. *papaveriflora* has bipinnate leaves and erect, widely cylindrical to ovoidal capsules. It grows on the eastern slopes of the Andes from Baños (Prov. Cotopaxi) northward to Maldonado (Prov. Carchi) and then again from the departments Huila and El Valle in Colombia up to Antioquia and Norte de Santander and right into the Venezuelan Andes, up into the coastal ranges near Carácas. It shows rather peculiar distributional gaps in southern Colombia (Nariño – where *L. ramirezii* Weigend sp. nov., a close ally with entire leaves takes its place) and in the Sierra Nevada de Santa Marta (César – where the spectacular *L. schliemiana* and another new, undescribed taxon, both from the series *Saccatae*, replace it). Geographically and characterwise subsp. *papaverifolia* is central to the *L. triphylla* complex.

– *L. triphylla* subsp. *rudis* goes from northern Panama right up into Mexico (Chiapas, Verapaz). It is the most robust of all subspecies characterized by large, bipinnate leaves with coarsely serrate margins, large, widely clavate to ovoidal, erect capsules and stems up to 2 m high. Its flowers are characterized by petals apically protracted into two filiform appendages and floral scales with an unappendaged back. While the presence of dorsal horns on the scales is typical for most other subspecies, *L. triphylla* subsp. *papaverifolia* shows considerable variation in this character. The specimens from Ecuador, Venezuela and the major part of Colombia have dorsal horns, some specimens from Antioquia (as far as sufficiently well preserved to show this character) lack these projections: Thus the Antioquian specimens approach subsp. *rudis* in this feature. These two subspecies also share emarginate petals which are apically protracted into two filiform appendages (illustrated in WOODSON & SCHERY 1970: 37, Fig. 9). These threads are short in Antioquian material of subsp. *papaverifolia* and well developed in subsp. *rudis*. The differences between subsp. *papaverifolia* and subsp. *rudis* are of a purely quantitative nature (degree of leaf dissection, stem height, flower size) but they are separated by a large distributional gap: The northernmost collections of subsp. *papaverifolia* come from Medellín (Antioquia, northeastern Colombia) and the southernmost collections of subsp. *rudis* from Chiriquí (northern Panama).

– a different species occurs south of *L. triphylla* subsp. *triphylla* in southern Ecuador and northern Peru: *L. bicornuta* sp. nov. is a straggly herb of up to 1.5 m



high with trifoliolate to pinnate leaves, comparatively large flowers (3.5 cm in diameter) and conical capsules, which are strictly upright from a horizontal pedicel, i.e. the pedicel is bent 90 degrees at the base of the capsule.

– *L. triphylla* var. *chelidoniifolia* Urb. & Gilg occurs from Bolívar south to Loja within the distributional range of the typical subspecies. It is, however, very distinctive in having strictly trifoliolate leaves with sessile, esetulose leaflets with entire to subentire margins (versus petiolate, setose leaflets with mucronate to deeply serrate leaflets in all other morphs) and flowers lacking the horn-like projections on the scales plus conical, erect fruit from an erect pedicel. It is therefore proposed to separate this taxon from *L. triphylla* and give it specific status under the name *Loasa roseoalba* (sp. nov., distribution see fig. 8.). This taxon approaches *L. humboldtiana* Urban & Gilg, also lacking the horns on the scales (but scales do differ in shape and lack an apical callus in the latter, see fig. 5) and having trifoliolate leaves.

– The var. *aequatoriana* Urb. & Gilg from Pichincha is also given specific status under the name of *Loasa aequatoriana* stat. nov. This is the tallest of these taxa growing up to 3.5 m high in undisturbed mistbelt forest and differs also in always having pendent fruit. (Distribution see fig. 8.).

### *L. triphylla* in the series *Saccatae*

*L. triphylla* Juss. sensu Urban & Gilg, i.e. including all the above named morphs, is closely related to the Ecuadorean taxa *L. humboldtiana* Urb. & Gilg and *L. dyeri* Urb. & Gilg (two very poorly understood species which are only known from the respective type collections by R. Spruce and one more recent collection each). All these taxa are characterized by trifoliolate to pinnate leaves and white, pendent flowers with horizontally spreading or reflexed petals. Outside the *Saccatae* the group clearly related to *L. triphylla* is represented by *L. venezuelensis* (Steyerm.) Weigend and its allies in northeastern Colombia and northwestern Venezuela. The position of *L. venezuelensis* and its allies in the genus *Loasa* is discussed elsewhere in more detail (*Cajophora venezuelensis* and its Allies, see below).

The majority of the other members of the ser. *Saccatae* are Peruvian, with only three northern outliers in Colombia (one of them here described), and share the white, pendant flowers with reflexed petals, but are characterized by entire to variously dissected to (bi-)pinnatifid, but never trifoliolate or pinnate leaves. *L. ramirezii* is of some interest in this context: It has flowers nearly indistinguishable from *L. triphylla* subsp. *papaverifolia* and it replaces the latter in southern Colombia (southern Valle de Cauca and Nariño, fig. 8), yet it has the undivided leaves of the Peruvian *Saccatae*. Seedlings of *L. triphylla* subsp. *papaverifolia* and of *L. ramirezii* cultivated at Munich Botanical Garden both had the primary leaves opposite and undivided, this being probably the primitive character state in this group of Loasas (shared with the neighbouring ser. *Alatae* and ser. *Grandiflorae*). *L. ramirezii* can thus be interpreted as either having retained this primitive character or – rather more likely – to be derived from ancestors in the *L. triphylla* agg. and having reverted to the primitive (and juvenile) leaf shape.

It is wrong to attribute alternate leaf position to the *Saccatae* in general as URBAN & GILG (1900: 219) did: The primary leaves are opposite and only the leaves in the inflorescence are alternate as in all Loasas of northern South America. Cultivated at Munich Botanical Garden *L. triphylla* subsp. *papaverifolia* developed three opposite pairs, the fourth leaf pair was inserted at slightly different heights along the stem, the following leaves – where the inflorescence started – were alternate. *L. ramirezii* showed exactly the same pattern. *L. triphylla* subsp. *triphylla*, however, has at best one pair of opposite leaves, and so have many *Saccatae* from Peru: These are very

short-lived annuals of drier habitats who have reduced the vegetative part of the stem and consist only of a rooted, foliose inflorescence – with alternate leaves.

Detailed morphological descriptions and ecological notes on the taxa here named will be provided in the respective floristic treatments.

### Key to *Loasa* ser. *Saccatae* of Ecuador, Venezuela, Columbia and Central America

The ten taxa here recognized of this group are characterized by:

- annual habit with succulent stems streaked with dark green
  - white, pendent flowers with white, deeply cymbiform petals reflexed into a horizontal plane
  - ovate floral scales not or very shortly protracted into wings apically
- 1 Leaves not divided to midvein 2
  - Leaves trifoliolate to bipinnate 3
  - 2 Sepals lanceolate, petals white, to 1 cm long (Southern Colombia)
    - L. ramirezii* Weigend
  - Sepals ovate, petals greenish-white, 2.5 cm long (only northern Colombia, Sierra Nevada de Santa Marta) *L. schliemiana* Planch. & Triana
  - 3 Scales without apical callus, rectangular from ovate base, esaccate or slightly saccate, without dorsal horns 4
  - Scales with apical callus, ovate to cymbiform, often with two dorsal horns 5
  - 4 Scales slightly bisaccate basally, leaves trifoliolate with leaflets with cuneate base, margins mucronate *L. humboldtiana* Urb. & Gilg
  - Scales esaccate, leaves pinnate with leaflets with truncate base, margin serrate *L. dyeri* Urb. & Gilg
  - 5 Leaves always trifoliolate, rarely with additional leaflets in basal leaves 6
  - Leaves pinnate to bipinnate 8
  - 6 Leaflets subsessile, subentire; scales without dorsal horns
    - L. steyermarkii* Weigend
  - Leaflets petiolate, serrate or mucronate, scales with well developed dorsal horns 7
  - 7 Fruit cylindrical, pedicel erect *L. triphylla* subsp. *triphylla* Juss
  - Fruit conical, erect from horizontal pedicel *L. bicornuta* Weigend
  - 8 Fruit conical, pendent, flowers to 5 cm in diam.
    - L. aequatoriana* (Urb. & Gilg) Weigend
  - Fruit clavate to cylindrical, erect to horizontal, flowers smaller 9
  - 9 Scales  $0.4 \times 0.15$  cm, usually with dorsal horns, largest leaflets  $8-9 \times 2$  cm, petals if emarginate with filiform appendages no longer than 0.1 cm
    - L. triphylla* subsp. *papaverifolia* (Humb., Bonpl. & Kunth) Weigend
  - Scales  $0.7 \times 0.3$  cm, always without dorsal horns, largest leaflets  $16 \times 3$  cm, petals always emarginate and with filiform appendages to 0.3 cm long
    - L. triphylla* subsp. *rudis* (Benth.) Weigend

### Clave para la determinacion de *Loasa* ser. *Saccatae* de Ecuador, Colombia, Venezuela y America Central

Se aceptan diez especies de este grupo que se caracterizan por:

- tallos succulentos con líneas oscuras
- flores péndulas con pétalos blancos, profundamente naviculiformes, reflejos en un plano horizontal
- escamas nectaríferas ovoideas no aladas en el apice

- 1 Hojas no profundamente divididas 2
- Hojas trifoliadas-pinnadas 3
- 2 Sépalos lanceolados, pétalos blancos, de hasta 1 cm de largo (Southern Colombia) *L. ramirezii* Weigend
- Sépalos ovados, pétalos blanco-verdosos, de hasta 2.5 cm de largo (Sierra Nevada de Santa Marta, Northern Colombia) *L. schliemiana* Planch. & Triana
- 3 Escamas sin callos apicales, base ovada á rectangular, no sacadas-levemente sacadas, sin cuernos dorsales 4
- Escamas con callos apicales, ovadas ó cymbiformes, a menudo con dos cuernos dorsales 5
- 4 Escamas levemente sacadas basalmente, hojas trifoliadas con hojuelas de base cuneada y margen mucronado *L. humboldtiana* Urb. & Gilg
- Escamas no sacadas, hojas pinnadas con hojuelas con base truncada y margen serrado *L. dyeri* Urban & Gilg
- 5 Hojas siempre trifoliadas, rara vez con hojuelas adicionales en hojas basales 6
- Hojas pinnadas á bipinnadas 8
- 6 Hojuelas sessiles, subenteras, escamas sin cuernos dorsales *L. steyermarkii* Weigend
- Hojuelas pecioladas, serradas o mucronadas, escamas con cuernos dorsales bien desarrolladas 7
- 7 Fruto cilíndrico, pedicelo erecto *L. triphylla* subsp. *triphylla* Juss
- Fruto cónico, erecto con pedicelo horizontal *L. bicornuta* Weigend
- 8 Fruto cónico, péndulo, flores de hasta 5 cm de diam. *L. aequatoriana* (Urb. & Gilg) Weigend
- Fruto clavado-cilíndrico, erecto-horizontal, flores mas pequeñas 9
- 9 Escamas 0.4 × 0.15 cm, generalmente con cuernos dorsales, hojuelas mayores 8–9 × 2 cm, si los pétalos son emarginados apéndices filiformes no mayores de 0.2 cm *L. triphylla* subsp. *papaverifolia* (Humb., Bonpl. & Kunth) Weigend
- Escamas 0.7 × 0.3 cm, nunca con cuernos dorsales, hojuela mayor 16 × 3 cm, pétalos siempre emarginados y con apéndices filiformes hasta 0.5 cm *L. triphylla* subsp. *rudis* (Benth.) Weigend

## Formal Taxonomy

- 1a. *Loasa triphylla*** Juss. subsp. *triphylla*, in Ann. Mus. Natl. Hist. Nat. 5: 27, pl. 5, t. 2. 1804. Syntypes: Loxa, *Humboldt & Bonpland* 1837; Loxa, *Humboldt & Bonpland s.n.*; *Cardamine urens* in Peruvia, drawing by Morainville. **Lectotype** (here designated): Drawing of “*Cardamine urens* in Peruvia”, by Morainville (P-JUSS!). Syntypes: [Ecuador. Loja] Loxa, *Humboldt & Bonpland* 1837 (P-JUSS! Iso: P! P-BONPL!).
- = *L. vulcanica* André in Illustr. Hortic. 25: 302. 1878. Type: “in Cordillera occidentali Andium Equatoriensium ad pedem montis ignivomi Corazon, circa 1500–1800 m, junio 1876”, *André s.n.* Lectotype (here designated): [Ecuador. Pichincha] Am Fuße des Corazón, *André s.n.* (K!, Iso: NY!).
- = *Loasa wallisii* Maxim., in Gartenflora: 357. 1878. Type: Semina hoc nomine a hortulano D. Platz accepta, probabiliter a D. Wallis collecta et tunc patria Columbia vel civitates alpinae adjacentes. Lectotype (here designated): in Maximowicz, Gartenflora 27: 357. pl. 958. 1878).
- *L. triphylla* Juss. var. *genuina* Urb. & Gilg, in Monogr. Loasac. – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 238. 1900. nomen invalidum.
- non *L. triphylla* Ruiz & Pavon in Flora Peruviana, et Chilensis 5. – Anal. Inst. bot. Cavanilles 16/17: 18, t. 450, f. a. 1958. (= *L. roseoalba* Weigend, sp. nov.).

Fig. 1

There is an excellent colour drawing by Morainville preserved at P-JUSS which is cited in the protologue as being the one the name was originally based on (– the corresponding herbarium collections of J. De Jussieu were partly lost in Loja – DIELS 1937: 48). It shows all the crucial characters of the typical subspecies and is therefore here designated as lectotype. There are quite a number of specimens from Loja by Humboldt and Bonpland in the Paris herbaria. Unfortunately only few of them have a collection number and while it is possible that most if not all of them were collected together only the ones with the collection number 1837 are here accepted as belonging to one set selected as syntypes. The lectotype is not chosen from this material as it represents a form with slightly smaller flowers than the true *L. triphylla* (the Joseph De Jussieu plant) and if it should become necessary to separate the two forms in future the accepted use of the name would have to be altered.

*L. vulcanica* is the northern form of this plant with larger flowers and is identical with *L. wallisii* Maxim. also described from cultivation. As far as can be deduced from description and drawing both may ultimately have come from the same seed source.

Specimens seen:

**Ecuador.** **Chimborazo:** Alausí, 3000 m, *Jameson s.n.* (W); Pumallacta, *Humboldt & Bonpland s.n.* (P) – Alausí to Nariz del Diablo, 2100 m, *Asplund 6871* (F, S). – **Loja:** 25 km from Loja to San Lucas, 2200 m, *Dodson 649 & Thien* (MO). Chuquiribamba, *Poortman 164* (P), Loxa, *Humboldt & Bonpland s.n.* (P) – “In loxam peruvianorum”, *Humboldt & Bonpland 1837* (P, P-BONPL, P-JUSS).

**1b. *Loasa triphylla* Juss. subsp. *papaverifolia* (Humb., Bonpl. & Kunth) Weigend stat. nov.**

Basion.: *L. papaverifolia* Humb., Bonpl. & Kunth in *Plantae Aequinoctiales* 3: 404. 1824. *Loasa triphylla* var. *papaverifolia* (Humb., Bonpl. & Kunth) Urb. & Gilg, in *Monogr. Loasac.* – *Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur.* 76: 239. 1900. **Lectotype:** [Colombia. Tolima] Inter Quebrada de Toche et Los Galiegos, Quindío, *Humboldt & Bonpland* (P-BONPL!; Iso: P!, P-BONPL!).

= *L. chelodoniifolia* Benth., in *Bot. Voy. Sulph.*: 101. 1844. Holotype: [Colombia. Nariño] Mangles on the River Mira, *Barclay 863* (K!).

Vernacular name: ortiguilla de tigre (Ecuador, fide *Eggers*), ortiga blanca, pringamoza (Colombia).

This is a rather variable subspecies, more characterized by quantitative differences than qualitative ones. It is close to subsp. *rudis* in the north and subsp. *triphylla* in the south. Future field studies will hopefully help to clarify the precise southern distributional limit.

Specimens seen:

**Colombia.** **Antioquia:** Mpio Caramanta, Vereda Hojas Anchas, 9.8 km towards Supía from Caramanta, *Bernal 1724* (COL) – Medellín, Angelópolis, *Toro 900* (NY, UNA) – Medellín, Titiribi, *Toro 1195* (NY) – Medellín, Fredonia, *Toro 849* (UNA); Mpio San Vicente del Caguán, Los Monos, 1550 m, *de Robira s.n.*, (HUA). – **Norte de Santander:** Loso north of Toledo, 2200–2240 m, *Killip 20392 & Smith* (BM, F). – **Santander:** Vicinity of Charta, 2000



m, *Killip 19022 & Smith* (NY). – Risaralda: Pereira, Parque Regional Ucumurí, el Ceilán, *F. Gonzalez 1686* (COL). – Quindío: San Juan near the border between Antioquia and Quindío, 2000 m, *Th. von Bayern 200* (M) – Mpio Calarca, Finca El Calabozo, 1850 m, *Arbelaez 1524* (quind) – Salento, Río Boquilla, 1600–1900 m, *Killip 8837 & Hazen* (NY). – Cundinamarca: Between San Bernardo and Sasaima, 1600–1800 m, *Cuatrecasas 9590* (NY) – Laguna Pedro Palo above Finca San José, 32km from Mosquera to La Mesa, 2000–2250 m, *Gentry 17153 & Fallen* (MO). – Tolima: San Miguel to La Lora, *Hazen 9672* (NY) – Ibagué to Cajamarca, *Alston 7717* (BM) – between Calamarca and Filo Divisorio, 2400 m, *Killip 34527 & Varela* (BM) – La Trinidad, Libano, 1100–1300 m, *Pennell 3320* (NY) – inter Quebrada de Toche et Los Galiegos, Quindío, *Humboldt & Bonpland s.n.* (P,P-BONPL). – El Valle de Cauca: Calamar, margin of Río Bugalagrande, 1680 m, *Cuatrecasas 20531* (F). – Huila: Balsillas on Río Balsillas, 2000–2100 m, *Rusby 806 & Pennell* (NY). – Nariño: Mangles, on the River Mira, *Barclay 853* (K).

**Venezuela.** Lara: Distr. Jiménez, between La Encrucijada and the path to P.N. Yacambú de El Blanquito, 10–15 km SSE of Sasanare, 1750 m, *Steyermark 103512 et al.* (NY) – P.N. Yacambú, *de Rojas 1757* (F) – P.N. Yacambú, *Xena 623* (F). – Tachira: Las Delicias to Paraguita, on Río Táchira, 1675–1980 m, *Steyermark 574* (F, NY).

**Ecuador.** Carchi: Maldonado, 90 km W of Tulcán, 1500 m, *Balslev 1961* (NY) – NAPO: Quito to Baeza, 34 km E of Papallacta, 1.2 km N of junction of roads to Baeza and Río Agrío, 1800 m, *Croat 58473* (MO). – Pichincha: Quito, Nanegal, Bosque Protectora Maquipucana, 1300–1400 m, *Webster 29274* (AAU). – Tunguragua: Ambato, Baños, Cocha de Santa Rosa, 2300 m, *Heinrichs 98* (M) – Baños, opposite Agoyan, 1800 m, *Weigend & Horn 3802* (M) – Baños, above Bizcaya, *Weigend & Horn 3804* (M, QCA, QCNE).

#### 1c. *Loasa triphylla* Juss. subsp. *rudis* (Benth.) Weigend stat. nov.

Basion.: *Loasa rudis* Benth. in Pl. Hartweg.: 75. 1839. *L. triphylla* var. *rudis* (Benth.) Urb. & Gilg. in Monogr. Loasac. – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 239. 1900. **Holotype**: [Guatemala] Santa María, *Hartweg 1040* (K!).

= *L. rhoeadifolia* Schlecht., *Linnaea* 14: 382. 1840. Type: [Mexico] Cuesta Grande de Chuquillo, *Schiede s.n.*

= *L. bipinnata* Donn.Sm., Coult. Bot. Gaz. 23: 7. 1897. Syntypes: San José to Desamparados, *Pittier 1314*; Llanos de Alanjuelita, 1000 m, *Tonduz 1477* (BM!). Lectotype (here designated): [Costa Rica, San José] San José to Desamparados, *Pittier 1314* (BM!; Iso: BR).

Vernacular name: chichicaste (Mexico, Nicaragua, Guatemala), ortiga, pringamoza (Costa Rica, Panama).

Fig. 3

As *L. triphylla* subsp. *rudis* is geographically well isolated there is no danger of confusing it with subsp. *papaverifolia*, to which it is morphologically rather similar. In spite of its wide distribution it is extremely homogeneous and may have gone through a “genetic bottleneck” when colonizing Central America.

Specimens seen:

**Mexico.** Veracruz: Mpio. Yecuatla, between Naolinco and Misantla, 13 km S of turnoff Yecuatla, 1200 m, *Nee 26369 et al.* (F, NY, XAL). – Orizaba: Prov. Oaxaca, *Giesbrecht 50* (P). – Chiapas: Mpio Rayón, Nuevo Jolistahuacán to Tapiula, Puerto del Viento, 2000 m, *Breedlove 9002* (NY) – Rincón Chamula near Nuevo Jolistahuacán, 2000 m, *Clarke 272* (NY);

Tacaná, Talquián, 2200 m, *Breedlove* 31699 (NY) – Volcán Tacaná, 2 km N of Colonia, Toguián, 1700 m, *Croat* 47140 (MO) – dito, *E. Matuda* 2486 (NY).

**Guatemala.** Alta Verapaz: Mountains of Tactic, road to Tamahú, 1500–1650 m, *Standley* 71225 (F). – San Marcos: W Slope of Sierra Madre, near Fraternidad, between San Rafael Pie de la Cuesta and Palo Gordo, 1800–2400 m, *Williams* 2705 *et al.* (F, G, NY), 26237 (F, G, NY) – 6 km S of Tajumulco, NW slopes of Volcán Tajumulco, 2300–2800 m, *Steyermark* 36612 (F) – Above El Porvenir, El Rodeo, 1400 m, *Sharp* 46108 (F) – Río Cabós, Malacatán, 3000 m, *Standley* 68891 (F) – 13 km NW of El Porvenir, between Finca El Porvenir and Loma Corona, Volcán Tajumulco, 1300–2000 m, *Steyermark* 37723 (F). – Quetzaltenango: Between Sta María de Jesús and Calahuachí, S slopes of Volcán Sta María, Quebrada San Gerónimo, Finca Pirineos, 1300–2000 m, *Steyermark* 33366 (F) – Santa María de Jesús, along Río Samala, 1500–1650 m, *Standley* 84646 (F) – Volcán Sta María, Finca El Foro – Finca San José Patulín, 1510–1560 m, *Förther* 2454 (M) – Aguas Amargas, Volcán de Zumil, 2450–2850 m, *Standley* 65428 (F) – *Standley* 83309 (F) – Boxantín, SE of San Martín Chile Verde, 2400 m, *Standley* 83719 (F) – San Martín Chile Verde to Colomba, above Mujalá, 1800 m, *Standley* 85551 (F). – Retalhuleu: Finca Helvetia, 1800 m, *Muenschner* 12432 (F).

**Nicaragua.** Jinotega: Mpio Jinotega, Tuma Valle, Hacienda La Trampa, *Hawkes et al.* 2149 (F).

**Costa Rica.** Alajuela: Vara Blanca de Sarapiquí, N slope of Cord. Central, between Volcanoes Poás and Barba, 1770 m, *Skutch* 3368 (MO, NY) – Río La Paz Falls on road to Pto. Viejo, 1400–1500 m, *Burger et al.* 11859 (AAU, F) – Penas Blancas, 950 m, *Hepper* 1477 (BM). – Heredia: N of San Isidro, NE of Concepción, 1500 m, *Khan et al.* 1271 (BM) – Vicinity of Bajo La Hondura, between Paracito and Río Claro, 1100–1400 m, *Croat* 44509A (MO). – San José: El General, 1160 m, *Skutch* 2936 (MO, NY) – San Isidro del General along Interamerican Highway, 1800 m, *Burger* 7058 & *R.L. Liesner* (NY, MO, F) – Carlos Rojas on E slopes of Volcán Irazú, 2500 m, *Durkee* 76–135 (F) – Río Claro Valley, Río La Hondura, La Palma NE of San Jeronimo, 1000–1200 m, *Burger* 9076 & *Gentry* (F) – Finca Porvenir, *Utly & Utly* 2890 (F) – Quebrada de los Yases between La Guaria and Palmilera, 1700 m, *Jiménez* 1460 (F, NY) – Valle de Los Arcangeles, Irazú Volcán, 1500 m, *Pittier* 13049 (BM). – Cartago: 12 km S of Turrialba, 4 km SE of Pejibaye on Río Gato, 700 m, *Liesner* 14269 (MO) – Santa Cruz, Bridge over Río Aquiares, 1500 m, *Lent* 1068 (F, MO) – Tapantí, Río Grande de Orosí, 1200 m, *Jiménez* 1622 (F); 3 km E of Cachi, 980 m, *Almeda* 3211 *et al.* (F). – Puntarenas: Zona Protectora Las Tablas, San Vito Coto Brus, Sabalito, Río Negro, 1300–1800 m, *Mora* 44 (MO, F) – Cantón Coto Brus, Las Mellizas, 1700 m, *Herrera* 3450 (MO, F) – Monteverde, Bull Pen, Reserva Forestal, 1500 m, *Gentry* 48789 *et al.* (MO).

**Panama.** Chiriquí: Upper Río Chiriquí Viejo near Cerro Punta, *G. White* 39 (MO) – 3.7 km E of bridge NE of Cerro Punta on road to Bajo Grande, 2250–2400 m, *W.D. Stevens* 18202 (NY), *Mori* 5731 & *Kallunki* (MO) – Monte Rey above Boquete, *Croat* 15671 (NY) – Boquete, F. Collins Finca, 2000 m, *Ebinger* 721 (F, MO) – Boquete, Bajo Chorro, 2000 m, *Davidson* 277 (F, MO) – Casita Alta, Volcán Chiriquí, 1500–2000 m, *Woodson* 936 *et al.* (F, MO) – *D. Díaz* 39 (F, MO) – Fort Clayton, Canal Zone, 2500 m, *Blum* 2670 & *Dwyer* (MO) – Boquete Trail, Cerro Respinga, 2000–2500 m, E of Cerro Punta, *Gentry* 5954 (MO), *Tyson* 6666 (MO) – Las Lagunas W of El Hato del Volcán, 2400 m, *Hamilton* 926 *et al.* (MO), *Folsom* 5977 & *Page* (MO) – Lower slopes of Barú, E of Bajo Chorro, 2000 m, *Hammel* 2943 (MO).

## 2. *Loasa aequatoriana* (Urb. & Gilg) Weigend stat. nov.

Basion.: *Loasa triphylla* var. *aequatoriana* Urb. & Gilg, in Monogr. Loasac. – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 240. 1900. **Lectotype** (here designated): [Ecuador] In Andium nemoribus, 3000 m, *Jameson* 427 (P!; Iso: BM!, E!).

Fig. 2

The Paris material is here selected as lectotype as representing the best specimen of the Jameson collections.

This species shows strong morphological and ecological differentiation from *L. triphylla* s. str. Its inflorescences are always branched with curved branches, so as to have a number of open flowers at a time in one plane. The capsules are always pendent. Whereas all other species here described grow in open, often disturbed ground, *L. aequatoriana* is found in pristine forest habitats, growing along streams and reaching heights of over 3.5 meters. Its succulent stems are nearly free of setae and those present are very short (0.5 mm vs 1.5–2 mm) and parallelly reflexed (vs erect).

Specimens seen:

**Ecuador. Pichincha:** Between Nono and Nanegal NW of Quito, 17 km NW of Nono, 2000 m, *Croat 3845* (MO) – Chiriboga on road from Quito to Santo Domingo de los Colorados, 1800 m, *Asplund 8680* (MO,S) – dito, Cerón 29086 (QAP) – 15 km W of Aloag on road to Santo Domingo de los Colorados, 2700 m, *Argent 534* (E) – Old road from Chillagallo-San Juan-Chiriboga-Empalme, Hacienda Las Palmeras, margin of Río de las Palmeras, 1850 m, *J. Jaramillo 5963* (NY) – Río Guajalito N.R., La Soledad, Quebrada La Soledad, 1800 m, *Weigend & Jaramillo 3937* (M, QCA, QCNE) – dito, *Jaramillo & Zak 587* (QCA). – without exact locality: In andium nemoribus, 3000 m, *Jameson 427* (BM, E, P).

### 3. *Loasa bicornuta* Weigend sp. nov.

**Holotype:** Peru. Dpto Piura: Prov. Huancabamba, Palimbala (Canchaque-Huancabamba), *Sagástegui 8137*, *Cabanillas & Dios* (AAU!; Iso: G!, MO!).

Fig. 4

Herba annua caulis usque ad 150 cm altus, pilis minimis glochidiatis et setis erectis obtectus; folia petiolo usque ad 3,5 cm longo, laminis ad 5–13 cm longis, 5–12 cm latis, trifoliolata vel pinnata, pinnis breviter petiolatis ellipticis et apice abrupte acuminatis, marginibus  $\pm$  regulariter serrato-dentatis; floribus 5-meris in inflorescentiam terminale multifloram dispositis, 3,5–5 cm in diametro, petalis reflexis, albis, 1,5–2,3 cm longis; capsula conica vel ovoidea, 1,8–2 cm longa, superne 0,7 cm lata, setis brunneis dense oblecta, stricte erecta, pedicelli usque ad 5 cm longo recurvati instructa.

This species is characterized by very long, hornlike nectar sacs on the back of its scales (name!) and a cavity at the base of the staminodia. This latter feature is not found in any of its relatives. It reaches from northern Ecuador just into the southern part of the province of Loja in Ecuador, without overlapping either with *L. rosealba* or *L. triphylla* subsp. *typica*.

Specimens seen:

**Ecuador. Loja** San Pedro de la Bendita to Cisne, km 8, 1900 m, *Ollgard et al. 90703* (LOJA) – Pindal, San Francisco, *Vivar et al. 2809* (LOJA, M) – dito, *Vivar et al. 850* (LOJA) – Celica, 2700 m, *Vivar et al. 754* (LOJA).

**Peru. Piura:** Ayabaca, Yacumapapa to Cuévas, 2500 m, *López 7770 et al.* (NY) – Ayabaca, *Weberbauer 6424* (F) – Huancabamba, between Serrán & Canchaque, 500–600 m, *Ferreya 10771* (MO) – Huancabamba, between Palambila & Faique, 1400–1500 m, *Ferreya 10857*

(MO). – La Libertad: Prov. Cajamarca, Colasay, 2700 m, *Woytkowski 6894* (AAU, F, G, MO, NY).

#### 4. *Loasa roseoalba* Weigend sp. nov.

**Holotype**: Ecuador, Bolívar, Rivulet northeast of Chillanes, 2500 m, *Weigend & Horn 3812* (M!, Iso: QCA!, QCNE, for dist.).

- = *Loasa triphylla* Ruiz & Pavon, *Flora Peruviae, et Chilensis* 5. – Anal. Inst. bot. Cavanilles 16/17: 18. t. 450 f. a. 1952. Lectotype (here designated): [Ecuador] *Loasa triphylla* de Huayaquil, *Ruiz & Pavon s.n.* (BM!; Iso: G!).
- *Loasa triphylla* var. *chelidoniifolia* (Benth.) Urb. & Gilg, *Monogr. Loasac.* – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 237. 1900. sensu Urban & Gilg excl. typo.

Fig.5

Herba metralis, caulibus stricte erectis superne pilis glochidiatis laxe et setis pallidis sparsissime obiectis, foliis trifoliatis, foliolis lanceolati-ellipticis, apice acuminatis et basin cuneatis, foliolis lateralibus oblique ellipticis, petiolis 2–2,5 cm longis, esetulosis, laminis pilosis, esetulosis, margine pauce mucronatis; floribus pendulis, apice caulis in inflorescentiam vel simplicem vel bifurcatam dispositis, pedicellis 2,5 cm longis, prophyllis euphyllloideis, indivisis, non vel brevissime petiolatis, calycis tubo 0,3 cm longo et lato, pilis glochidiatis densissime et setis pallidis vel dense vel sparsissime obiecto, calycis lobis late ovatis, 0,6 cm longis basin 0,4 cm latis, intus glabris extus pilosis; petalis albis, cymbiformibus, 1,7 cm longis, 0,6 cm latis (profundis), squamis ovoideis, a latere visis inferne incurvatis, saccato-convexis, superne antice paullo late emarginatis lobis apicalibus late rotundatis; capsula conica 1,5 cm longa, superne 1 cm lata, dense pilosa, sparse vel dense setosa, inter lobos calycinis 3-valvis.

The name *L. triphylla* would suit this species much better than the aggregate it is currently used for, as this species is truly trifoliate. Ruiz and Pavon were the first to employ the name, but this particular volume of the *Flora Peruviana et Chilensis* was only validly published in 1958 (STAFLEU & COWAN 1983, vol. 4: 983:) though basically finished before 1800. Thus the Jussieu name, published in 1804, takes priority and *L. triphylla* Ruiz & Pavon is a later homonym. The “var. *chelidoniifolia*” by Urban & Gilg is equally inadequate, being explicitly based on *L. chelidoniifolia* Benth. which is the name of a completely different plant, and referable as a synonym to *L. triphylla* subsp. *papaverifolia*.

Thus the plant has to be renamed and I propose to call it *L. roseoalba* because of the colour of its nectar scales. These are white and rose pink, while all closely related taxa have nectar scales red and yellow.

Specimens seen:

**Ecuador. Bolívar**: 10 km south of Chillanes, 2350 m, Boysen Larsen et al. 45488 (QCA, QCNE) – Rivulet northeast of Chillanes, 2500 m, *Weigend & Horn 3812* (M, QCA, QCNE). – **Azuay**: Río Gamolotal and Río Huigra on road to Molleturu, 1220–1520 m, *Steyermark 52909* (F). – **Loja**: Celica to Zapotillo road, km 5, 2100–2200 m, *Harling & Andersson 22448* (QCA).



**5. *Loasa ramirezii* Weigend sp. nov.**

**Holotype:** Colombia. Nariño: Mpio Tangua, 5km south of Tangua in a coffee plantation, 2600 m, *Weigend 3280 & Ramírez* (M!; Iso: COL!, PSO!).

Fig. 6

Herba annua, 0.6–1.5 m alta caulibus erectis, sparse setosis setis erectis pallidis; fo-  
lia ovata 5–12.5 cm longa, 3–10 cm lata, longe petiolata (6 cm), laminis vix lobulatis,  
lobulis latissime triangularibus, marginis denticulatis vel subserratis, basin cordata; flo-  
res 5-meri, in apice caulis in monochasia usque ad 15-flora dispositi, pedicellis 1,2 cm  
longis, prophyllis euphyllloideis longeque petiolatis, calycis tubo 0.2 m longo et lato,  
setis pallidis densissime obstructo, calycis lobis linari-lanceolatis, 0,3 cm longis, 0,1 cm  
latis, acutis; petalis cymbiformibus, basin unguiculatis utrinque dentis instructis,  
reflexis, 1 cm longis, 0,5 cm latis (vel profundis), extus setulosis; squamis erectis,  
anguste ovatis, convexis, luteis, collis callibus rubris ornatis; capsulis pendulis, turbi-  
natis, 2,2 cm longis, 0,5 cm latis, dense setis pallidis obtectis.

The taxon is named after B.R. Ramírez P. from the Universidad de Nariño who discovered the plant and led me to the largest known population during my field studies.

Only four collections of this plant are known, three of them in the area of the type collection. The other specimen, collected by Lehmann in 1880, comes from the slopes of the Volcán Sotará/ El Valle.

Like most Loasas *L. ramirezii* seems to be a plant with highly specific habitat requirements growing only in partial shade in deep, humus rich soil in coffee plantations. Though extremely frequent in the place of the type collection it is absent from fields and hedges only a few hundred meters away. Like most if not all Colombian Loasas *L. ramirezii* flowers and fruits throughout the year, though the plants spread and multiply particularly during the wet season and somewhat diminish, flowering and fruiting less freely during the drier periods of the year. It is a short lived annual, rapidly growing from the copiously produced seeds.

It is easily distinguished from the other *Saccatae* of Ecuador, Colombia and Venezuela by its undivided leaves and its linear-lanceolate sepals. The only other taxon with undivided leaves in this area is *L. schliemiana* from the Sierra Nevada de Santa Marta which is very densely setose and pubescent and has greenish flowers with petals about 2.5 cm long.

Specimens seen:

**Colombia. Valle de Cauca:** Popayán, Western slopes of the Sotará Volcanoe, 2400 m, *Lehmann 6205* (K). – **Nariño:** Tangua, Tapialquer, 2250–2500 m, *Ramírez s.n.* (PSO) – 5km south of Tangua in a coffee plantation, 2600 m, *Weigend 3280 & Ramírez* (M, COL, PSO) – Tajumbina, Mpio de la Cruz, 2630 m, *Buenavides s.n.* (PSO) – Mpio Consacá, Mpio de Coriaco, 1820 m, *Ramírez s.n.* (PSO) – Mpio de Consacá, Sección de Coriaco, 1820 m, *Guarín 407* (PSO).

**6. *Loasa dyeri* Urb. & Gilg, in Monogr. Loasac. – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 242. 1900. **Lectotype** (here designated) : [Ecuador. Chimborazo] Chimborazo, San Antonio, *Spruce 6183* (BM!; Iso: CBGE!, W (Photo F!)).**

Specimens seen:

**Ecuador.** Cotopaxi: Tenefuerste, Río Pilalo, 52 km from Quevedo to Latacunga, 750–1300 m, *Dodson 12244 & Gentry* (MO) – dito, *Dodson 13480 & Embree* (MO). – Chimborazo: San Antonio, *Spruce 6183* (BM, CBGE, W).

**7. *Loasa humboldtiana*** Urb. & Gilg, in Monogr. Loasac. – Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. 76: 240. 1900. **Lectotype** (here designated): [Ecuador. Tungurahua] Llalla, Tungurahua, *Spruce 6002* (P !, Iso: B†: photo F!, BM!, E!, OXF!, GOET!, W!).

## II: “*Cajophora*” *venezuelensis* Steyermark and its allies

### Introduction

J.A. STEYERMARK (1952: 414) described two new species of *Cajophora*, a genus not previously known from northern South America, from his own collections in the Venezuelan Andes. Only the type collections of this species existed until recently. These lack fruit and one of them (*Steyermark 56594*) has no flower either. Though there is considerable confusion regarding the generic limits of *Loasa* and *Cajophora* there can be no doubt that the affinity of the plants described by Steyermark is rather with the Loasas of northern South America than with the Peruvian and Bolivian members of *Cajophora*. This is immediately borne out by the morphology of the floral scales and leaf morphology, which clearly link *Cajophora venezuelensis* to Loasas such as the widespread *L. triphylla* Juss. complex or *L. lindeniana* Urb. & Gilg from Venezuela. Additional material of neither of these species had been collected until I had the opportunity to visit the site of the type collection of *C. venezuelensis* at Tabay near Mérida in Mérida/Venezuela and recollected (fruiting) material of this species.

From the Serranía de Perijá on the border between Colombia and Venezuela and the Colombian Sierra Nevada de Santa Marta additional material of taxa clearly undescribed and equally clearly related to *C. venezuelensis* has now come to light, greatly enhancing our understanding of this branch of Loasoideae.

### Discussion

The original descriptions of *C. venezuelensis* Steyermark and *C. larensis* Steyermark are accompanied by drawings of the floral scales and leaves (STEYERMARK 1952: 413, fig. 86 & 415, fig. 87). The key characters differentiating the two taxa are slight differences in the degree to which the scales are winged and the supposedly alternate leaf position of *C. venezuelensis* versus an opposite one in *C. larensis*. The former clearly is within the variation of scale shape typical of *Loasa* and encountered also comparing the only three collections known of *L. perijensis* sp. nov. Leaf position is strictly opposite in *C. venezuelensis* and alternate only in the inflorescence, like in *C. larensis* and nearly all other most Loasas. This could be observed in the wild at the type locality. Other differences in the drawings are either due to the completely different scales the plants are drawn at odd drawing mistakes (shape of staminodia). Studying the types from Field Museum no convincing differences could be found. So there does not seem to be any reason to retain these two taxa as distinct and it is

therefore proposed to sink the name *C. larensis* as geographically misleading into the more appropriate *C. venezuelensis*.

In collecting nearly mature fruit of *C. venezuelensis* these turned out to be straight, conical capsules strictly conforming to the pattern observed in the genus *Loasa*. This adds to the overall similarity in floral and vegetative characters and it therefore seems appropriate to transfer *C. venezuelensis* to the latter and rename it *Loasa venezuelensis* comb. nov. (Distribution see fig. 9).

Interestingly enough plants rather similar to *L. venezuelensis* have come to our knowledge from the Serranía de Perijá and the Sierra Nevada de Santa Marta. The plants from the Sierra Nevada de Santa Marta are superficially similar to *L. venezuelensis* and have been identified as such (e.g. by M. Poston, Washington). Closer examination immediately reveals some good differentiating characters: In addition to differences in the indumentum and leaf margins, the capsules in *L. santa-martae* sp. nov. are much smaller and the scales are conspicuously protracted into two wings 0.3 cm long while the leaves are nearly setulose. (Distribution see fig. 9).

The plants from the Perijá, though clearly allied, stand out by their rather short, blunt petals (versus acuminate ones 1.5 times longer in the other two species), ovate capsules (versus conical), up to 10-flowered inflorescences (versus single- or two-flowered ones), scales with 2 conspicuous horns on their backs (versus concave scales) and by being densely covered by very dark, blackish-brown setae on inflorescence and calyces (versus lax covering with pale to reddish brown setae) and stipulate leaves (versus estipulate ones). They are thus highly distinctive and a new species is here proposed to accommodate them: *Loasa perijensis*. This is the first species of *Loasa* to be discovered in the Serranía de Perijá. The material used in this study was kindly provided by S. Tillett, Universidad Nacional de Venezuela at Caracas, who also facilitated detailed collector's notes on the plants. There are slight differences between the three collections seen: *Tillett 747-947* and *747-459* are very similar while *Tillett 747-1943* shows smaller inflorescences, less conspicuously horned scales and a less dense indumentum. From comparing this variation with that encountered in other species of *Loasa* it does not seem justified to separate this morph taxonomically. All of these collections come from the same area, (distribution see fig. 9). It is interesting to see that *L. perijensis* is another species with stipulate leaves, a character already known from the Peruvian *Loasa stuebeliana* Urb. & Gilg (ser. *Saccatae*).

The three species here discussed clearly form a natural assemblage. The combination of bipinnatisect leaves and large, campanulate, yellow flowers is not encountered elsewhere in the genus. This group is restricted to the mountain ranges between the Sierra Nevada de Mérida and the Sierra Nevada de Santa Marta, with one species each per mountain range. The affinities of this group are with two different series in *Loasa*: They share the deeply dissected leaves and saccate to horned scales of ser. *Saccatae* Urb. & Gilg while also sharing the variously winged scales and the large, yellow, campanulate flowers and (sub-)perennial character of ser. *Alatae* Urb. & Gilg. *L. venezuelensis* and its allies have capsules opening with apical valves only, a character shared with ser. *Alatae* and ser. *Saccatae* (and separating these three groups from ser. *Grandiflorae* Urb. & Gilg). Thus *L. venezuelensis*, *L. perijensis* and *L. santa-martae* are best considered as a homogeneous group of equal rank to the other series in northern South America. As, however, the delimitation of genera and subgeneric entities within *Loasa* is anything but clear at the moment no formal recognition as a new series is here proposed. The Urban & Gilg concept is here perpetuated but as a working concept while a more natural subdivision is wanting.

## Key to the *Loasa venezuelensis* group

This key is for Loasas which are characterized by yellow flowers and deeply divided leaves. They are restricted to northwestern Venezuela and northeastern Colombia

- 1 Leaves with large stipules, petals to 3 cm long, calyx and stem very densely covered with very dark setae (black or dark brown), inflorescences many-flowered (Serranía de Perijá) *Loasa perijensis* Weigend
- Leaves without stipules, petals 5 cm long, calyx and stem less densely covered with brown setae, inflorescences usually with one or two, very rarely up to three flowers 2
- 2 Scales with very narrow back (falcate), apically winged, esaccate dorsally (Sierra Nevada de Santa Marta) *Loasa santa-martae* Weigend
- Scales with wide, rectangular back, not or very shortly winged apically, with two basal sacs (Venezuelan Andes) *Loasa venezuelensis* (Steierm.) Weigend

## Clave para la determinación de las Loasas afines a *L. venezuelensis*

Estas Loasas se caracterizan por poseer hojas profundamente divididas y flores amarillas. Se encuentran solamente en el noroeste de Venezuela y el noreste de Colombia.

- 1 Hojas con estípulas grandes, pétalos de hasta 3 cm de largo, caliz y tallo recubiertos por muchísimos pelos urticantes oscuros (negros-marrones), inflorescencias con muchas flores (Serranía de Perijá) *Loasa perijensis* Weigend
- Hojas sin estípulas, pétalos de hasta 5 cm de largo, cáliz y tallo con pelos urticantes marrones, inflorescencias con una o dos, rara vez tres flores 2
- 2 Escamas muy estrechas, falcadas, aladas en el ápice, sin sacos dorsales (Sierra Nevada de Santa Marta) *Loasa santa-martae* Weigend
- Escamas rectangulares, sin alas apicales o con alas muy cortas, con dos sacos dorsales en la base (Andes de Venezuela) *Loasa venezuelensis* (Steierm.) Weigend

## Formal Taxonomy

### 1. *Loasa venezuelensis* (Steierm.) Weigend **comb. nov.**

Basion.: *Cajophora venezuelensis* Steierm., in Contrib. to the Flora of Venezuela.

- Fieldiana 28 (2): 414. 1952. **Holotype:** Venezuela. Merida: Mérida, La Isla at Tabay<sup>1</sup>), 2280–2745 m, *Steiermark* 56594 (F!).
- = *Cajophora larensis* Steierm., Contrib. to the Flora of Venezuela. – Fieldiana 28 (2): 412. 1952. **Holotype:** Venezuela. Lara: Between Buenos Aires and El Callado valley, above Humocaro Alto, 2285–2740 m, *Steiermark* 55528 (F!).

### Fig. 12 E–H

*L. venezuelensis* grows up to three meters high in dense, impenetrable bamboo thickets where it is supported by surrounding vegetation and also found on the side of the path where it is self-supported and much lower (1.5 m).

*L. venezuelensis* is not at all frequent in the area and only two adult and some 5 young plants were encountered. It is thus much rarer than *L. lindeniana* growing in the same area at slightly higher altitudes and forming extensive stands with dozens of

1) The area formerly called “La Isla” is now known as “La Mucuy” and lies within the P.N. Sierra Nevada.



individuals. Yet the vegetation type where *L. venezuelensis* grows is anything but very accessible and it is highly likely that more specimens of this taxon could be found, probably also in other moist forests of the region.

Specimens seen:

**Venezuela.** Lara : Between Buenos Aires and El Callado valley, above Humocaro Alto, 2285–2740 m, *Steyermark* 55528 (F). – Mérida. La Mucuy at Tabay, P.N. Sierra Nevada, 2800 m, *Weigend* 2805 (MERC, VEN, M) – Mérida, La Isla at Tabay, 2280–2745 m, *Steyermark* 56594 (F).

## 2. *Loasa perijensis* Weigend sp. nov.

**Holotype:** Venezuela. Zulia. Distr. Maracaibo, Sierra de Perijá, Serranía de Valledupar, Campamento “Monte Viruela”, 3000–3150 m, *Tillett* 747-1159 (M!, Iso: VEN!, MYF!).

Fig. 10,11

Frutex usque ad 2 m altus, caulibus dense retrorsum setosis, setis rufo-nigrescentibus 0,15–0,2 cm longis; foliis ambitu triangulari-ovatis, oppositis, supremis (in inflorescentiam) alternis, petiolis 8–12 cm longis, dense retrorsum setosis, basin stipulatis, laminis pinnatipartitis, 22 cm longis, 18 cm latis, in utroque latere 5-lobatis, lobis anguste ovatis vel oblongo-lanceolatis, pinnatilobatis, lobulis grosse serratis; floribus pentameris, apice caulis in monochasiam saepe basin bifurcatam usque ad 6-floram dispositis, pedicellis 1,5 cm longis, prophyllis sessilibus triangulari-ovatis, ad 2,5 cm longis, pinnatisectis; calycis tubo 0,5 cm longo et lato, setis ad 0,3 cm longis brunneis nigrescentibus densissime obtectis, calycis lobis ovato-lanceolatis, 0,5 cm longis, basin 0,3 cm latis, integerrimis, dorso setosis et pilis glochiadiatis obtectis, petalis ± planis, aurantiacis, late ovatis, basin in utroque latere dentatis, 2,8 cm longis et 1,9 cm latis, extus setosis et pilosis, intus parcissime pilosis, squamis inferne incurvatis, dorso bisacatis vel bicalcaratis, superne manifeste bialatis, alis 0,3 cm longis, 0,25 cm latis, ovatis; capsulis turbinato-ovoides, 2,5 cm longis, apice 1 cm latis, densissime setis nigrescentibus obtectis.

This is one of the most distinctive species of the genus and unmistakable by the combination of stipulate and dissected leaves. It is a shrubby plant with lignescent stems and reaches the upper limit of forest vegetation in the Serranía de Valledupar, Colombia.

Specimens seen:

**Colombia.** César: East of Manaure, Quebrada de Florida Blanca, 2700–2800 m, *Cuatrecasas & Castañeda* 25227 (COL).

**Venezuela.** Zulia: Distr. Maracaibo, Sierra de Perijá, Serranía de Valledupar, Campamento “Monte Viruela”, 3000–3150 m, *Tillett* 747-1159 (MYF, Iso: VEN, M) – Campamento “Frontera V”, headwaters of Río Guasare, 2700–2800 m, *Tillett* 747-1043 (M, MYF) – Westside of Cerro Laminado, 5 km north of Buena Vista, headwaters of Río Apón, 3300–3650 m, *Tillett & Hönig* 747-947 (M, MYF).

### 3. *Loasa santa-martae* Weigend sp. nov.

**Holotype:** Colombia. Magdalena. Sierra Nevada de Santa Marta, Mpio San Pedro, Headwaters of Río Sevilla near the Finca Cebolleta, 3000 m, *Burbidge 311* (E!, Photo M).

Fig.12 A–D

Frutex usque ad 3 m altus, caulibus subscandentibus vel suberectis, sparse setosis; foliis ambitu triangulari-ovatis, oppositis, supremis (in inflorescentiam) alternis, petiolis 5 cm longis, sparse retrorsum setosis, laminis bipinnatipartitis, 12 cm longis 1 cm latis, lobis late lanceolatis grosse serrato-dentatis, in utroque latere 5-6-lobatis, parce setosis et pilosis; floribus 5-meris, calycis tubo 0,7 cm longo et lato, setis rufis vel flavescentibus oblecto, calycis lobis ovato-lanceolatis longe acuminatis 1,5 cm longis, basin 0,7 cm latis, intus subglabris extus sparse setosis, petalis  $\pm$  planis, lanceolatis acuminatis, bene evolutis 4,5 cm longis, medio 2,5 cm latis, extus sparse setulosis, squamis inferne incurvatis, dorso bisaccatis, superne manifeste bialatis, alis 0,6 cm longis, 0,2 cm latis, ovatis; capsulis breviter conicis, 1,2 cm longis superne 1,3 cm latis.

The Burbidge collections had to be selected as type as it is the only specimen with fruit and flower. The specimens from COL had not yet been received when this diagnosis was prepared.

This new species is known from only a few collections from the northeastern Sierra Nevada, where it seems to coexist with the virtually unknown *L. karsteniana* (probably a member of the ser. *Grandiflorae* Urb. & Gilg). In the drier southeastern Sierra Nevada the genus is instead represented the predominantly Peruvian *Loasa* ser. *Saccatae*, e.g. *L. schliemiana* Planch. & Triana. The falcate scales, i.e. scales where the normally broad back is reduced to nothing but a narrow ridge, are unique in Loasaceae.

Specimens seen:

**Colombia. Magdalena:** Watershed between Ríofrio and Quebrada de Páramo, 3350 m, *Jaramillo et al. 5523* (COL) – 1 km NW of Quebrada de la Laguna Ríofrio towards Pico José Hilario, 3400 m, *Forero & Kirkbride 619* (COL) – headwaters of Río Sevilla, *Barclay & Junjibioy 6708* (COL) – path from Cebolleta to Páramo; 2400–3100 m, *Castañeda 7101* (COL) – Sierra Nevada de Santa Marta, Mpio San Pedro, Headwaters of Río Sevilla near the Finca Cebolleta, 3000 m, *Burbidge 311* (E).

## III: Proper use of the name *L. grandiflora* Desr. and a new species from Colombia

### Introduction

*L. grandiflora* is one of the oldest names in the genus *Loasa* published by LAMARCK (1789: 580). Desrousseux, who prepared the chapter on Loasas, explicitly based his description of *Loasa grandiflora* on a plant collected by Joseph De Jussieu in the mid-18th century and preserved at the Jussieu herbarium in Paris. This plant, like almost all of Jussieu's collections of Loasaceae preserved at P-JUSS and contrary to the labels reading “herbier de Perou”, was undoubtedly collected in what is today Ecuador. A.L. DE JUSSIEU (1804) clearly based his specific concept on the J. De Jussieu specimen of *L. grandiflora*, but also mistakenly quoted a – truly Peruvian – collection by Dombey as being conspecific.

When WEDDELL compiled his *Chloris Andina* (1861, Vol. 2: 220) he relied on A.L. De Jussieu and compared his material of *Loasa* with the Dombey material only, rightly concluding that *Jameson 135* from central Ecuador was not conspecific with the Dombey plant from Peru, and described the former as *L. acuminata*. His use of these names was perpetuated by the monographers of Loasaceae URBAN & GILG (1900: 202) who again considered the Peruvian specimen as type of *L. grandiflora* – without consulting the Jussieu specimen and ignoring the clearly inconsistent pictures – while accepting Weddell's *L. acuminata* as a good Ecuadorean species. They even created yet another species from a Lehmann collection from northern Ecuador, naming it *L. aurantiaca*.

## Discussion

Comparison of the type material of all three species, the Dombey material from Geneva and Paris, new collections from all major herbaria and integration of this information with observations in the wild in southern Colombia lead to the conclusion that all three of the entities named above are really conspecific, while the Peruvian material from Dombey belongs to a separate taxon.

*L. grandiflora* Desr. is clearly the oldest name and takes priority. The illustrations in A.L. DE JUSSIEU (1804: 24, pl. 4, t. 2) and TURPIN (1816–1829: pl. 116) are unmistakably based on the Jussieu specimen of this plant – showing it with horizontally spreading petals (J. De Jussieu had completely opened the naturally campanulate flower to show its interior, but this was not subsequently realized by the respective artists). The types of *L. acuminata* and *L. grandiflora* are next to identical and there is a fair chance that they both came from the same area, as J. De Jussieu is known to have spent a lot of time in Quito and is likely to have collected in its surroundings, i.e. on Pichincha, where *Jameson 135* comes from (DIELS 1937: 48). Recent collections from this area show a considerable variation in vegetative characters, especially leaf size and outline. The Lehmann collections from Tulcán, Prov. Carchi, northern Ecuador are perfectly matched by some of these and it is impossible to retain *L. aurantiaca* Urb. & Gilg as a separate taxon – by renaming it (in naming *L. aurantiaca* Urban and Gilg created a homonym to *L. aurantiaca* Loudon (LOUDON 1840: 1246), which renders their name illegitimate.).

*L. grandiflora* Desr. is a shrubby plant with coriaceous, strictly opposite leaves and plane, fleshy petals clearly different from the Peruvian species represented by the Dombey collection. The latter is a herbaceous plant with thin leaves which are alternate on the stem and form a basal rosette. Its petals are deeply cymbiform, setose on the back and membranaceous. This latter plant, considered as *L. grandiflora* by Weddell, Urban & Gilg, Macbride and all recent workers, is left orphaned. URBAN (1910) did, however, describe a new species of *Loasa* from a Weberbauer collection from central Peru under the name of *L. cymbopetala*. MACBRIDE (1941) rightly recognized this species as coinciding with their and his concept of *L. grandiflora*, reducing it to synonymy under the latter. With *L. grandiflora* Juss. redefined, *L. cymbopetala* Urb. has to stand as the valid name of this plant. Numerous recent collections of this species are known, all from central Peru, and these correspond well both to Dombey and to the type photograph preserved at Field Museum of the Berlin specimen of *L. cymbopetala*. Dombey accompanied Ruiz & Pavón on their collecting trip in Peru, collecting in central Peru, inland and north of Lima (DAHLGREN 1940: 8).

### *Loasa* ser. *Grandiflorae* Urb. & Gilg

*L. grandiflora* is central to a group of species which has been formally assigned series rank by Urban & Gilg (1900: 192). Its redefinition makes it much more typical of that group than it previously was: The *Grandiflorae* have so far been considered as very close allies to two other northern South American series, the ser. *Alatae* Urb. & Gilg and ser. *Saccatae* Urb. & Gilg. This may be true for *L. cymbopetala* which recalls characters of the series *Alatae* in some aspects. The typical *Grandiflorae* occurring from Ecuador to Costa Rica, however, are highly distinctive. Urban and Gilg defined them only on the basis of their floral scales, which are apically protracted into erect wings unlike any other group of Loasoideae. But there is a number of additional characters: Field studies revealed that they are shrubs, with erect, lignescent branches from a decumbent, massively suckering base. They form low thickets some 1.5–2 m high and a few meters in diameter. They grow in more or less open vegetation or bamboo thickets and very strongly compete with other plants for space. The *Saccatae* and *Alatae* are erect herbs, slightly lignescent at best, branching only well above ground, developing succulent stems and brittle, succulent leaves. The leaves of the above named *Grandiflorae* are thick, often corrugated and coriaceous. Their inflorescences – far from being simple cymes as suggested by the scanty herbarium material – are branched thyrses with cymose branches. The petals are not membranaceous and cymbiform as in *Alatae* and *Saccatae*, but thick and fleshy, widely ovate and nearly flat. The staminodia are appendaged near the base, a character not found in the other two series. In northern South America it is the ser. *Grandiflorae* who reaches the upper altitudinal limit for the genus with the ser. *Alatae* and ser. *Saccatae* growing at lower altitudes.

The most interesting feature of the *Grandiflorae*, however, is their fruit morphology. It has been generally believed that all species of *Loasa* have capsules opening with apical valves while the neighbouring genus *Cajophora* has capsules opening with one or more longitudinal slits. Most *Grandiflorae*, however, have capsules opening with a longitudinal slit plus apical valves so that the initially clavate fruit opens to form something representing a grooved platform, releasing the seeds slowly as the placentae wither, exposing them to the action of wind and rain. This phenomenon, not previously reported in literature (and hardly ever visibly in dried material) clearly shows that there are a number of surprises still waiting in Loasoideae: The current generic subdivision is highly artificial.

These typical *Grandiflorae* comprise the species *L. speciosa* from Costa Rica and Panama, *L. lindeniana* from Venezuela, *L. argemonoides*, *L. peltiphylla*, *L. puracensis* from Columbia, *L. grandiflora* and *L. peltata* from Ecuador and *L. weberbaueri* from Peru. The *Grandiflorae* from Ecuador and Peru are currently under revision and future research will hopefully elucidate species limits and the precise relation between these groups.

Morphological descriptions and distribution maps will be published in floristic treatments for the respective countries, which are in preparation.

### A new *Loasa* with peltate leaves from Colombia

A new taxon clearly related to *L. grandiflora* was recently collected during field studies in southern Colombia. While recalling *L. grandiflora* (its closest geographical neighbour) in some aspects, it is very well differentiated by its peltate leaves and a stem covered with black lenticels. This new species is here described as *L. peltiphylla* Weigend, sp. nov., based on the type collection by B.R. Ramírez P. from Pasto/Nariño. There is only one other species known with peltate leaves. This is *L. peltata* Urb. &



Gilg which has long been ascribed to the Peruvian flora (MACBRIDE 1941: 161), because the label on the type collection by R. Spruce fails to mention the country. According to SPRUCE (in WALLACE 1908: 172) the precise collection locality is: Mount Mulmul just west of the Tungurahua in Central Ecuador. The plant was collected in November 1857 and represents a rather atypically small specimen of the species. Only two more collections of this plant have come to our knowledge (Lehmann 1793 & Pearce 1862), both considerably more robust. Though poorly understood at present *L. peltata* is easily differentiated from *L. peltiphylla* by its wider petals, peltate leaves stalked in the centre instead much towards the upper leaf margin, lack of black lenticels and presence of dense, white pubescence on all parts of the plant.

### Key to *Loasa* ser. *Grandiflorae* from Colombia, Venezuela, Panama and Costa Rica

6 species of the ser. *Grandiflorae* are here recognized. They show the following characters:

- woody plants from a decumbent base
  - pentagonous or palmate, rarely peltate leaves, coriaceous, base cordate
  - inflorescence branched with large, campanulate, orange flowers
  - petals flat, fleshy, scales with erect wings
  - staminodia with appendaged base
- 1 Leaves peltate 2
  - Leaves not peltate 3
  - 2 Stem with black lenticels, plant not white from dense covering with trichomes, petals 3 × 2 cm (only Pasto/Nariño/Colombia) *Loasa peltiphylla* Weigend
  - Stem without black lenticels, plants white from covering of diverse trichomes, especially stem and lower leaf surface, petals 3 × 3 cm (southern Ecuador) *Loasa peltata* Urb. & Gilg
  - 3 Petals to 2 cm long, plant to 70 cm high (El Valle to Quindío, Colombia) *Loasa puracensis* Killip 4
  - Petals 3–5 cm long, plant to 2 m high 5
  - 4 Floral scales with incurved wings, i.e. closed above (Venezuelan Andes) *Loasa lindeniana* Urb. & Gilg
  - Floral scale open above 5
  - 5 Plant appearing white from covering with trichomes, petals obovate, leaves to 18 cm long (Cordillera Oriental near Bogotá, Colombia) *Loasa argemonoides* Juss.
  - Plant not appearing from white covering with trichomes, petals ovate-lanceolate 6
  - 6 Leaves 15–20 cm long, petals to 3 cm long (southern Nariño and Ecuador) *Loasa grandiflora* Lam.
  - Leaves to 25 cm long, petals 4–5 cm long (Costa Rica and Panama) *Loasa speciosa* Standley

### Clave para la determinación de las especies de *Loasa* ser. *Grandiflorae* de Costa Rica, Panamá, Venezuela y Colombia

La serie *Grandiflorae* s.str. según nuestra definición incluye 6 especies en el área con los siguientes caracteres:

- plantas lignescentes con base decumbente
- hojas pentágonas o palmadas, rara vez peltadas, coriáceas, de base cordada;

- inflorescencia ramosa con flores grandes, campanuladas, anaranjadas
  - pétalos llanos, carnosos, escamas aladas con alas erectas
  - estaminodios con apéndice en la base.
- 1 Hojas peltadas 2
  - Hojas con base cordada, no peltadas 3
  - 2 Tallo con lenticelas negras, planta verde oscura (no cubierta por trichomas blancos), pétalos 3 × 2 cm (Pasto/Nariño/Colombia) *Loasa peltiphylla* Weigend
  - Lenticelas negras ausentes en el tallo, planta blanquecina debido a que está cubierta por numerosos trichomas blancos, especialmente en el tallo y en el envés de las hojas, pétalos 3 × 3 cm (Sur de Ecuador) *Loasa peltata* Urb. & Gilg
  - 3 Pétalos de hasta 2 cm de largo, planta hasta 70 cm de alto (El Valle hasta Quindío) *Loasa puracensis* Killipp
  - Pétalos 3–5 cm de largo, planta hasta 2 m de alto 4
  - 4 Escamas con alas apicales incurvadas, cerradas desde arriba (Andes de Venezuela) *Loasa lindeniana* Urb. & Gilg
  - Escamas con alas apicales erectas, abiertas desde arriba 5
  - 5 Planta blanquecina debido a que está cubierta por numerosos trichomas blancos, especialmente en el tallo y en el envés de las hojas, pétalos obovados (Cordillera Oriental cerca de Bogotá, Colombia) *Loasa argemonoides* Juss.
  - Planta verde oscura, pétalos ovado-lanceolados 6
  - 6 Hojas de hasta 15(–20) cm de largo, pétalos de hasta 3 cm de largo (Sur de Nariño y Ecuador) *Loasa grandiflora* Lam.
  - Hojas de hasta 25 cm de largo, pétalos 4–5 cm de largo (Costa Rica y Panamá) *Loasa speciosa* Standley

## Formal Taxonomy

1. *L. grandiflora* Desr., in Lamarck, Encycl. 3: 580. 1789.

**Holotype:** herb. du Perou, *Joseph de Jussieu s.n.* (P-JUSS!, photo M!, type fragment F!).

= *L. acuminata* Wedd., in Chloris Andina 2: 220. 1861. Lectotype (here designated): [Ecuador. Pichincha:] Western slopes of the Pichincha, 3650 m, *Jameson 135* (P!; Iso: BM!, E!, G!).

= *L. aurantiaca* Urb. & Gilg, in Monographia Loasacearum. – Nova Acta Caes. Leop.-Carol. German. Nat. Cur. 76: 209. 1900. Lectotype: [Ecuador. Carchi] Cordillera de Tulcán, 2800–3000 m, *Lehmann 533* (G!; Iso: BM!).

non *L. grandiflora* auct. sensu Urban & Gilg, in Monographia Loasacearum. – Nova Acta Caes. Leop.-Carol. German. Nat. Cur. 76: 202. 1900. (= *L. cymbopetala* Urban & Gilg).

non *L. grandiflora* Ruiz & Pavon, in Flora Peruviae, et Chilensis 5. – Anal. Inst. bot. Cavanilles 16/17: 404, t. 440. 1958. Type: [Central Peru:] *Loasa grandiflora* del Peru, *Ruiz & Pavon s.n.* (MA: photo M!). (= *L. macrantha* Urb. & Gilg?)

2. *L. cymbopetala* Urban & Gilg, in Bot. Jahrb. 45: 435. 1911.

**Holotype:** [Peru. Ancash:] Prov. Cajatambo, above Ocos, 3300–3500 m, *Weberbauer 2758* (B†: photo F!).

= *L. grandiflora* sensu Urban & Gilg in Monogr. Loasac. – Nova Acta Caes. Leop.-Carol. German. Nat. Cur. 76: 202. 1900.

non *L. cymbaepetala* Ruiz & Pavon, in Flora Peruviae et Chilensis 5. – Anal. Inst. bot. Cavanilles 16/17: 409 t. 442. 1958 (= *L. acanthifolia* Adanson)

### 3. *Loasa peltiphylla* Weigend sp. nov.

**Holotype:** Colombia. Nariño: Mpio Pasto, southeastern slope of Morasurco range, Corriente del Granadillo, near Ojo de Agua, 3100 m, B.R. Ramírez P. 6945 (M!; Iso: PSO, for distribution).

Vernacular name: ortiga calabaza

Fig. 13

*Frutex* 1.5 metralis, caulibus adscendentibus, basin decumbentibus, ad 1 cm diametientibus, lignescentibus, dense setis rufis 0.3–0.5 cm longis obtectis et lenticellis nigris ornatis; *foliis* oppositis, ambitu pentagonis et peltatis, petiolis 9–16 cm longis, retrorsum setosis, laminis 5-lobatis, lobis acutum triangularibus, lateralibus ad 5 cm latis et 6 cm longis, lobo centrali 8 cm lato et 10 cm longo, margine denticulato-serratis, subtus dense pilis glochidiatis obtectis et ad nervos principales setosis, supra setosis et pilosis; *floribus* pentameris, calycis tubo 0.5 cm lato, 0.6 cm longo, densissime setis rufis oblecto; calycis lobis basin late triangularibus superne longe acuminatis, 2.2 cm longis, basin 0.7 cm latis, pilosis et parce setosis, petalis ovatis, aurantiacis, 4 cm longis, 1.8 cm latis, extus pilosis et brevissime parceque setosis, intus glabris; squamis basin bisaccatis, superne manifeste bialatis, alis 0.6 cm longis 0.3 cm latis; 2 staminodiis, basin breviter appendiculatis et dense pubescentibus, 2 cm longis; *capsula* clavata, dense setis rufis oblecta.

*L. peltiphylla* has only been collected a few times and only in the area directly northeast of Pasto, i.e. on the Morasurco range.

It is a robust, shrubby plant with branched inflorescences and thick, coriaceous leaves. All parts of the plant are strongly urticaceous. This new *Loasa* was first encountered in dense bamboo thickets on an old landslide at 2800 m. It was subsequently recollected by Ramírez in a more open area, growing at the edge of pastures in Kikuyo (*Pennisetum clandestinum*). Habitwise it closely resembles *L. lindeni* from Venezuela and *L. grandiflora* from just south of Pasto and Ecuador. The large, pendent, orange flowers of *L. peltiphylla* are visited by bumblebees and – like all *Grandiflorae* observed – by small *Drosophila*-like Hymenoptera (pers. comm. B. Ramírez P.). While the latter are virtually immobile and highly unlikely to effect pollination, the bumblebees might. The flowers of *L. argemonoides* are visited by hummingbirds and it remains unclear for the moment which is the effective pollinator for the *Grandiflorae* in general.

Specimens seen:

**Ecuador.** Nariño: Between Meneses and Pasto, 2900 m, André 2877 (K) – Mpio Pasto, southeastern slope of Morasurco range, Corriente del Granadillo, near Ojo de Agua, 3100 m, Ramírez 6945 (M, PSO, for distr.).

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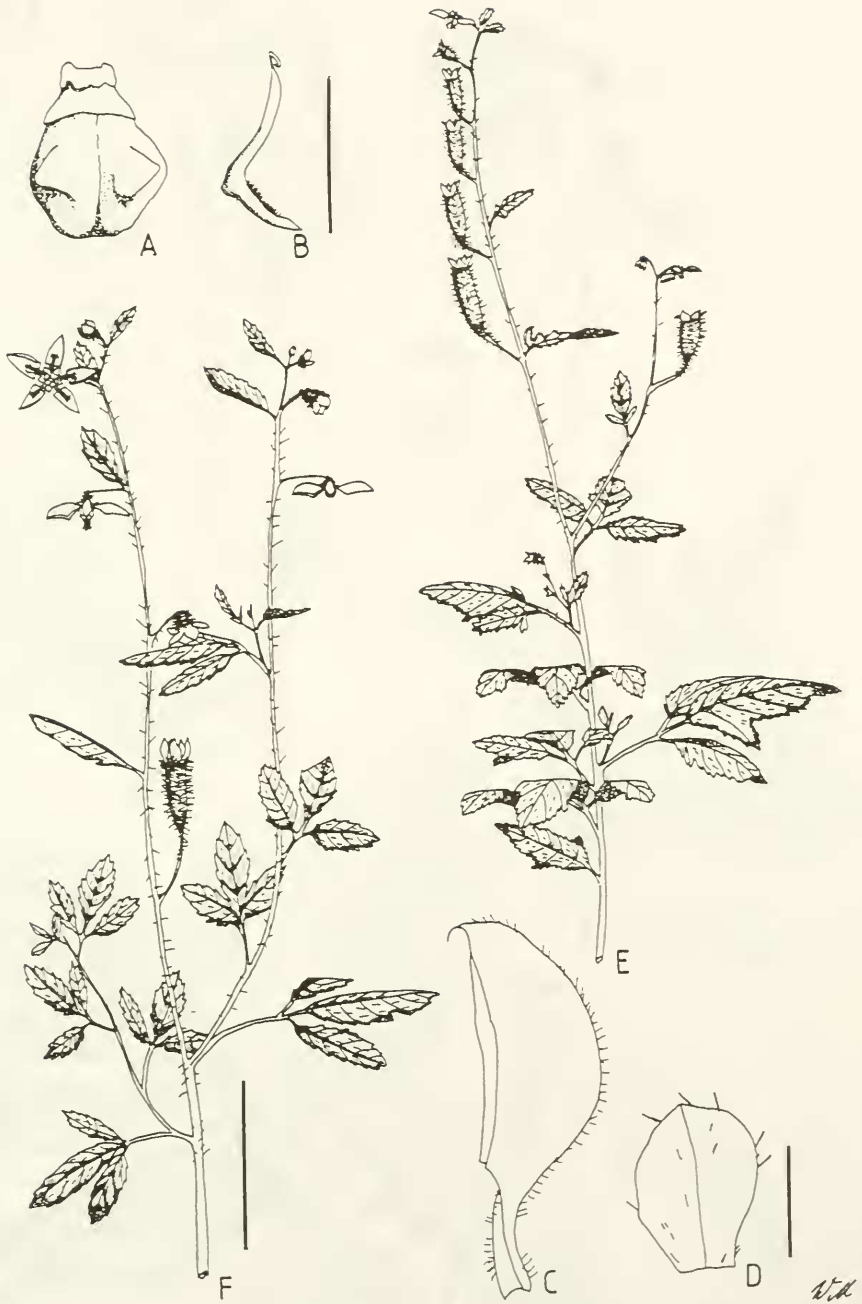


Fig. 1: *Loasa triphylla* Juss. subsp. *triphylla* (Asplund 6871): A, scale, dorsal view; B, staminodium, lateral view; C, petal, lateral view; D, sepal, dorsal view; E, habit; F, "*L. vulcanica* André", cultivated at Munich Bot. Garden, habit. Scale bars: A–D 0.5 cm, E, F 5 cm.



Fig. 2: *Loasa aequatoriana* (Urb. & Gilg) Weigend (Asplund 8680): A, scale, oblique lateral view; B, staminodium, lateral view; C, sepal, dorsal view; D petal, lateral view; E; habit. Scale bars A–D 0.5 cm, E 5 cm.



Fig. 3: *Loasa triphylla* Juss. subsp. *rudis* (Benth.) Weigend (Stevens 18202): A, scale, dorsal view; B, staminodium, ventral view; C, habit. Scale bars A–B 0.5 cm, C 5 cm.



Fig. 4: *Loasa bicornuta* Weigend (type coll.): A, scale, dorsal view; B, scale, lateral view; C, staminodium, lateral view; D, petal, lateral view; E, sepal, dorsal view; F, habit. Scale bars A–E 0.5 cm, F 5 cm



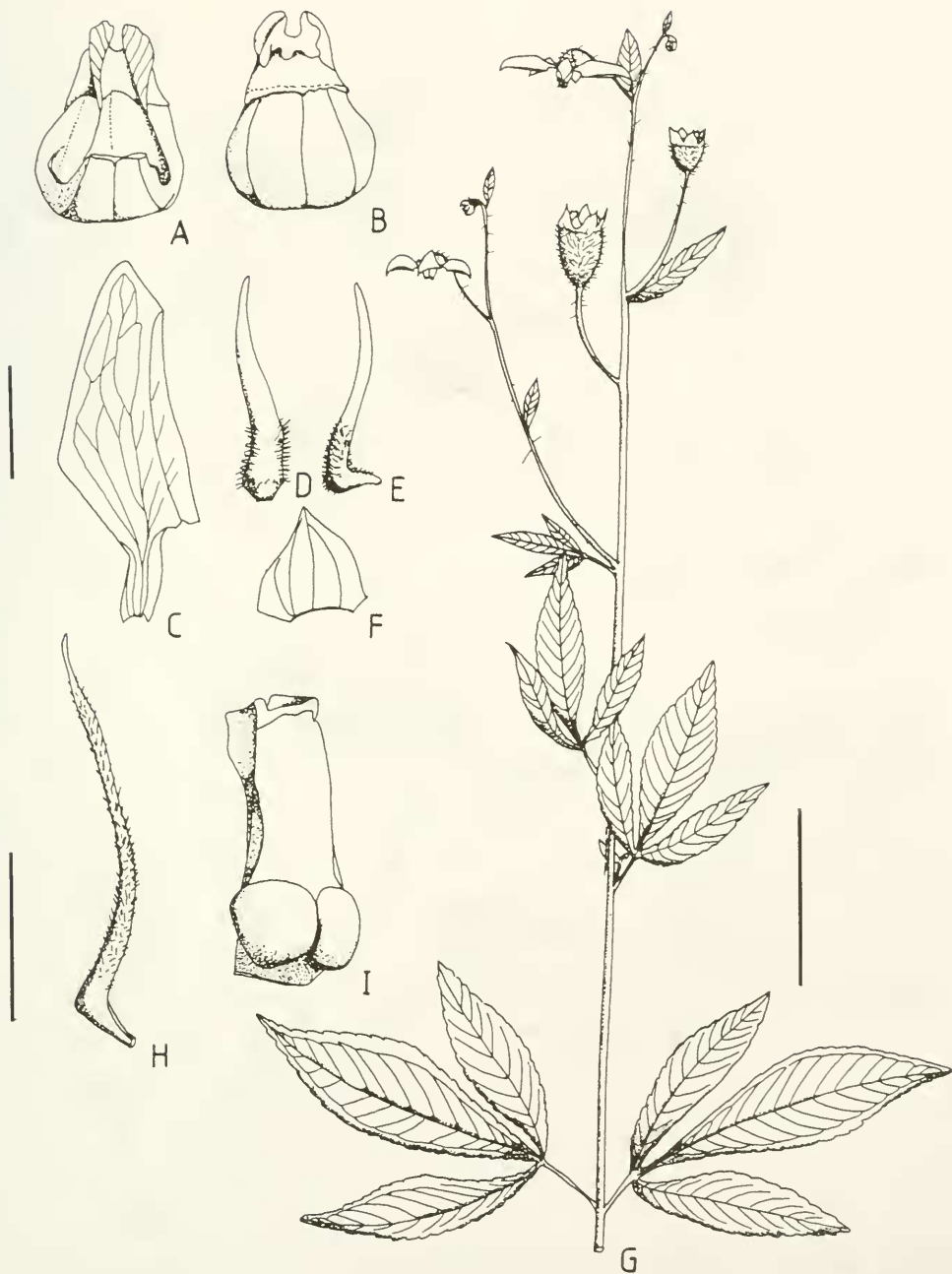


Fig. 5: *Loasa roseoalba* Weigend (Steiermark 52909): A, scale, ventral view; B, scale dorsal view; C, petal, lateral view; D, staminodium dorsal view; E, staminodium, lateral view; F, sepal, dorsal view; G, habit; *Loasa humboldtiana* Urb. & Gilg (type coll.): H, staminodium, lateral view; I, scale, dorsal view (all scales and staminodia drawn at same magnification). Scale bars: A-F, H, I 0.5 cm, G 5 cm.



Fig. 6: *Loasa ramirezii* Weigend (cult. at Munich Bot. Garden): A, flower, dorsal view; B, staminodium, lateral view; C, scale, dorsal view, with two stamnodia enclosed; D, scale, lateral view; E, petal, lateral view; F, sepal; G, habit. Scale bars A 1 cm, B–F 0.5 cm, G 5 cm.

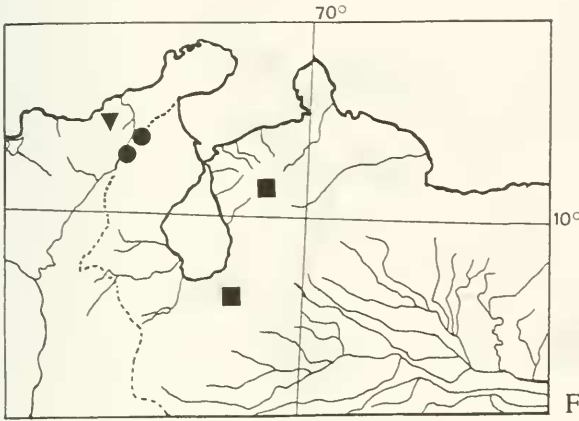


Fig. 9

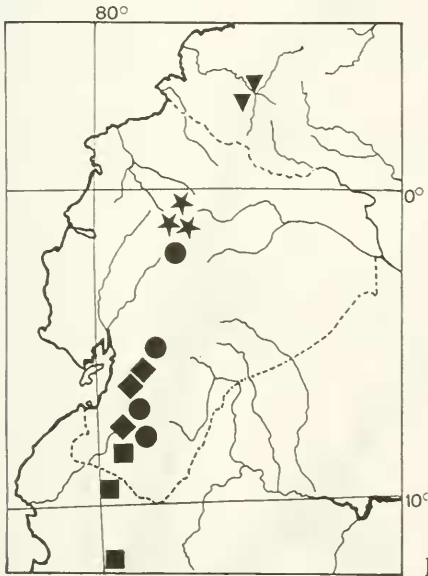


Fig. 8

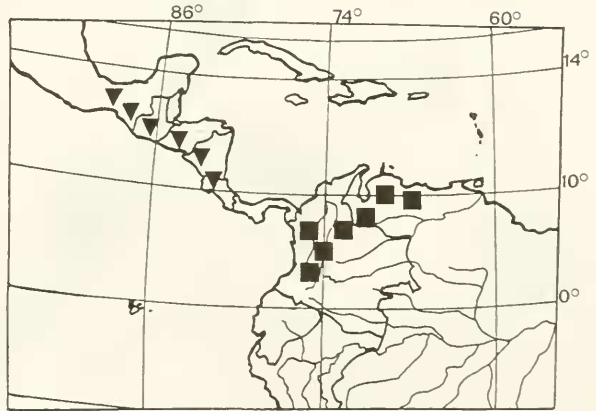


Fig.7

Fig.7: Distribution map for central and northern south America: ▼ *Loasa triphylla* Juss. subsp. *rudis* (Benth.) Weigend; ■ *Loasa triphylla* Juss. subsp. *papaverifolia* (Humb., Bonpl. & Kunth) Weigend.

Fig. 8: Distribution map for Ecuador and adjacent areas: ★ *Loasa aequatoriana* (Urb. & Gilg) Weigend, ◆ *Loasa roseoalba* Weigend, ▼ *Loasa ramirezii* Weigend, ■ *Loasa bicornuta* Weigend, ● *Loasa triphylla* Juss. subsp. *triphylla*.

Fig. 9: Distribution map: ■ *Loasa venezuelensis* (Steierm.) Weigend, ▼ *Loasa santamartae* Weigend, ● *Loasa perijensis* Weigend.



Fig. 10: *Loasa perijensis* Weigend (*type coll.*): A, scale lateral view; B, scale, dorsal view; C, staminodium lateral view; D, petal; E, sepal; F, inflorescence. Scale bars: A–C 0.5 cm, D, E 5 cm, F 5 cm.





Fig. 11: *Loasa perijensis* Weigend (type coll.): A, leaf from basal portion of plant; B, leaf from below inflorescence. Scale bars: A, B 5 cm.



Fig. 12: *Loasa santa-martae* Weigend (*type coll.*): A, scale, dorsal view; B, scale lateral view; C, staminodium, lateral view; D, inflorescence; *Loasa venezuelensis* (Steyserm.) Weigend (*type coll.*): E, staminodium; F, scale, dorsal view; G, sepal; H, petal. Scale bars A, B, C, E, F, 0.5 cm, D 5 cm, G, H 1 cm.

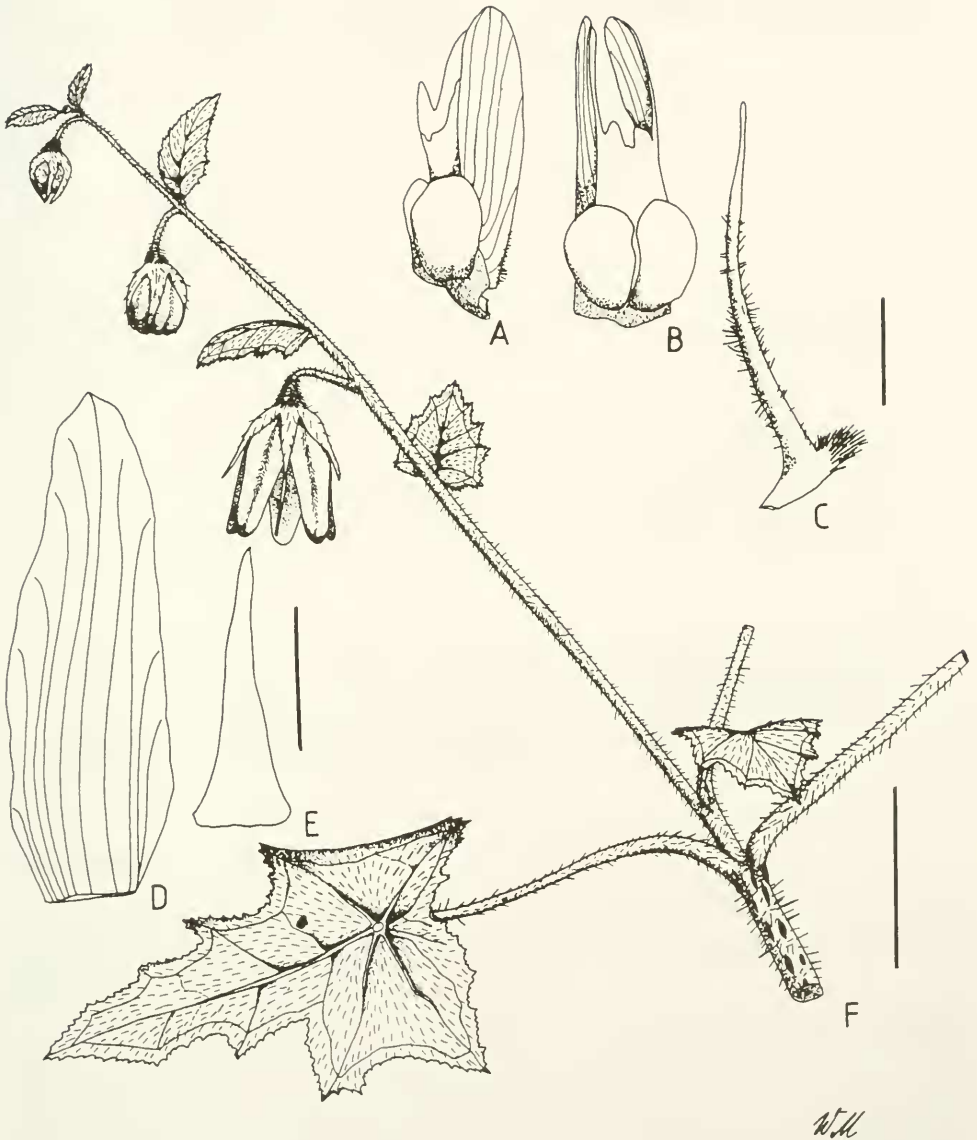


Fig.13: *Loasa peltiphylla* Weigend (type coll.): A, scale, lateral view; B, scale, dorsal view; C, staminodium, lateral view; D, petal; E, sepal; F, part of an inflorescence. Scale bars A-C 0.5 cm, D,E 1 cm, F 5 cm.